

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Previously presented) An isolated nucleic acid coding for a polypeptide having acyl-CoA:lysophospholipid-acyltransferase activity, wherein the isolated nucleic acid comprises a nucleotide sequence having at least 95% identity to the nucleotide sequence of SEQ ID NO: 1, or encodes a polypeptide having at least 95% identity to the polypeptide sequence of SEQ ID NO: 2, wherein the acyl-CoA:lysophospholipid acyltransferase encoded by said nucleic acid specifically uses C₁₆, C₁₈-, C₂₀- or C₂₂-fatty acids having at least one double bond as substrate.
2. (Previously presented) The isolated nucleic acid of claim 1, wherein the nucleic acid comprises the nucleotide sequence of SEQ ID NO: 1 or encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 2.
3. (Previously presented) The isolated nucleic acid of claim 1, which is obtained from a eukaryote.
4. (Cancelled)
5. (Previously presented) An expression cassette comprising the isolated nucleic acid of claim 1, wherein said nucleic acid is functionally linked to one or more regulatory signals.
6. (Previously presented) The expression cassette of claim 5, further comprising additional biosynthetic genes of the fatty acid or lipid metabolism, selected from the group consisting of acyl-CoA dehydrogenase(s), acyl-ACP[= acyl carrier protein] desaturase(s), acyl-ACP thioesterase(s), fatty acid acyltransferase(s), fatty acid synthase(s), fatty acid hydroxylase(s), acetyl-coenzyme A carboxylase(s), acyl-coenzyme A oxidase(s), fatty acid desaturase(s), fatty acid acetylenases, lipoxygenases, triacylglycerol lipases, allenoxide synthases, hydroperoxide lyases and fatty acid elongase(s).
7. (Previously presented) The expression cassette of claim 5, further comprising additional biosynthetic genes of the fatty acid or lipid metabolism, selected from the group consisting of Δ 4-desaturase, Δ 5-desaturase, Δ 6-desaturase, Δ 8-desaturase, Δ 9-desaturase, Δ 12-desaturase, Δ 5-elongase, Δ 6-elongase and Δ 9-elongase.
8. (Previously presented) A vector comprising the nucleic acid of claim 1, or an expression cassette comprising said nucleic acid functionally linked to one or more regulatory signals.

9. (Previously presented) A transgenic plant or microorganism comprising at least one nucleic acid of claim 1, an expression cassette comprising said nucleic acid functionally linked to one or more regulatory signals, or a vector comprising said nucleic acid or said expression cassette.

10-11. (Cancelled)

12. (Currently amended) A process for producing polyunsaturated fatty acids in an organism, wherein said process comprises:

- a) introducing into an organism at least one nucleic acid coding for a polypeptide having acyl-CoA:lysophospholipid-acyltransferase activity, and
- d) ~~b~~) culturing and harvesting said organism,

wherein the nucleic acid comprises a nucleotide sequence selected from the group consisting of:

- i) the nucleotide sequence of SEQ ID NO: 1,
- ii) a nucleotide sequence having at least 95% identity to the nucleotide sequence of SEQ ID NO: 1,
- iii) a nucleotide sequence ~~encodes~~ encoding the polypeptide sequence of SEQ ID NO: 2, and
- iv) a nucleotide sequence ~~encodes~~ encoding a polypeptide having at least 95% identity to the polypeptide sequence of SEQ ID NO: 2.

13. (Currently amended) The process of claim 12, wherein the process further comprises ~~introducing~~ introducing additional nucleic acid sequences into said organism, wherein the additional nucleic acid sequences code for polypeptides of the fatty acid or lipid metabolism selected from the group consisting of acyl-CoA-dehydrogenase(s), acyl-ACP[= acyl carrier protein] desaturase(s), acyl-ACP thioesterase(s), fatty acid acyltransferase(s), fatty acid synthase(s), fatty acid hydroxylase(s), acetyl-coenzyme A carboxylase(s), acyl-coenzyme A oxidase(s), fatty acid desaturase(s), fatty acid acetylenases, lipoxxygenases, triacylglycerol lipases, allenoxide synthases, hydroperoxide lyases and fatty acid elongase(s).

14. (Previously presented) The process of claim 12, wherein the process further comprises introducing additional nucleic acid sequences into the organism, wherein the additional nucleic acid sequences code for polypeptides selected from the group consisting of Δ 4-desaturase, Δ 5-desaturase, Δ 6-desaturase, Δ 8-desaturase, Δ 9-desaturase, Δ 12-desaturase, Δ 5-elongase, Δ 6-elongase and Δ 9-elongase activity.
15. (Previously presented) The process of claim 12, wherein the polypeptide having acyl-CoA:lysophospholipid acyltransferase activity uses C16-, C18-, C20- or C22-fatty acids as substrate.
16. (Previously presented) The process of claim 12, wherein the polyunsaturated fatty acids are isolated from the organism in the form of an oil, lipid or a free fatty acid.
17. (Currently amended) The process of claim 12, wherein the polyunsaturated fatty acid produced in said process is a C₁₈-, C₂₀- or C₂₂-fatty acids acid having at least two double bonds in the molecule.
18. (Previously presented) The process of claim 12, wherein the polyunsaturated fatty acid produced is dihomo- γ -linolenic acid, arachidonic acid, eicosapentaenoic acid, docosapentaenoic acid or docosahexaenoic acid.
19. (Previously presented) The process of claim 12, wherein the organism is a microorganism or a plant.
20. (Cancelled)
21. (Previously presented) The process of claim 19, wherein the plant is an oil crop plant.
- 22-33. (Cancelled)